

What Is Claimed Is:

1. A computer based method of biometric analysis, comprising comparing a first vector from a first biometric sample with a second vector from a second biometric sample, wherein said first and second vectors have at least one biometric feature.
- 5 2. The computer based method of claim 1, wherein the first vector and the second vector represent points in multidimensional space.
3. The computer based method of claim 1, wherein clustering of the first vector with the second vector indicates that the first biometric sample and the second biometric sample are from the same source.
- 10 4. The computer based method of claim 1, wherein differences in clustering distance between the first vector and the second vector indicate that the first biometric sample and the second biometric sample are from different sources.
5. A computer based method of biometric analysis, comprising comparing a first biometric sample with a second biometric sample, wherein said first and second biometric samples form at least one cluster of at least one vector based on feature similarities between said first and second biometric samples.
- 15 6. The computer based method of claim 5, wherein said first and second biometric samples are selected from the group consisting of handwriting samples, voice samples, face geometry samples, fingerprint samples, hand geometry samples, iris samples, retinal samples, vein samples, and voice samples.
- 20 7. The computer based method of claim 5, wherein the first biometric sample and the second biometric sample are handwriting samples.
8. The computer based method of claim 5, wherein said at least one cluster is a composite based on a model for measuring the distance between a first binary feature vector and a second binary feature vector.
- 25 9. The computer based method of claim 8, wherein said model for establishing individuality is selected from the group consisting of an identification model and a verification model.
10. The computer based method of claim 7, wherein said at least one cluster is a composite based on a model for measuring the distance between a first binary feature vector and a second

binary feature vector and wherein the accuracy of said model is measured by calculations involving features selected from the group consisting of micro-features, macro-features and a combination of micro- and macro-features.

11. The computer based method of claim 10, wherein the first binary feature and the second
5 binary feature are selected from the group consisting of a conventional feature and a computational feature.

12. The computer based method of claim 10, wherein the first binary feature and the second
binary feature are a conventional feature selected from the group consisting of arrangement, class
of allograph, connection, design of allographs (alphabets) and their construction, vertical
10 dimension, horizontal dimension, slant, slope, intraword spacing, interword spacing,
abbreviation, baseline alignment, initial stroke, terminal stroke, presence of punctuation, style of
punctuation, location of punctuation, embellishment, legibility, writing quality, line continuity,
line quality, pen control, arched writing movement, angular writing movement, interminable
writing movement, natural variation, natural consistency, persistency, lateral expansion, and
15 word proportions.

13. The computer based method of claim 10, wherein the first binary feature and the second
binary feature are a computational feature selected from the group consisting of a micro-feature
and a macro-feature.

14. The computer based method of claim 13, wherein the computational feature is a micro-
20 feature selected from the group consisting of gradient, structural and concavity attributes.

15. The computer based method of claim 13, wherein the computational feature is a micro-
feature of a character level parameter.

16. The computer based method of claim 13, wherein the computational feature is a macro-
feature selected from the group consisting of entropy of gray values, gray level binarization
25 threshold, black pixels, interior contours, exterior contours, vertical slope, horizontal slope,
negative slope, positive slope, stroke width, height and slant.

17. The computer based method of claim 13, wherein the computational feature is a macro-
feature selected from the group consisting of a document parameter, a paragraph parameter, and
a word level parameter.

18. An apparatus for biometric analysis, the apparatus comprising:

means for comparing a first vector from a first biometric sample with a second vector from a second biometric sample, wherein said first and second vectors have at least one biometric feature.

5 19. A computer-readable medium having stored thereon a plurality of instructions for biometric analysis, wherein the plurality of instructions, when executed by a processor, cause the processor to compare a first vector from a first biometric sample with a second vector from a second biometric sample, wherein said first and second vectors have at least one biometric feature.

10 20. The apparatus of claim 19, wherein the computer-readable medium is a CD-ROM.

21. A propagated computer data signal transmitted via a propagation medium, the computer data system comprising a plurality of instructions for biometric analysis, wherein the plurality of instructions, when executed by a processor, cause the processor to compare a first vector from a first biometric sample with a second vector from a second biometric sample, wherein said first
15 and second vectors have at least one biometric feature.

22. A computer based method of handwriting analysis, comprising:

calculating a first metric from a first vector having at least one feature from a first handwriting sample,

calculating a second metric from a second vector having at least one feature from a
20 second handwriting sample, and

calculating the distance in two-dimensional feature space between the first and second metrics.

25